

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	§	
Prathyusha K. Salla, et al.	§	Confirmation No. 1160
	§	
Application No.: 10/723,894	§	Group Art Unit: 3737
	§	
Filed: November 26, 2003	§	Examiner: Mehta, Parikha Solanki
	§	
For: METHOD AND SYSTEM FOR	§	Atty. Docket: 132958-3
RETROSPECTIVE GATING	§	GEMS:0263/RAR/LIU
USING MULTIPLE INPUTS	§	

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/ John Rariden /

John M. Rariden

**REPLY BRIEF PURSUANT TO 37 C.F.R. §§41.41**

Appellants respectfully submit this Reply Brief pursuant to 37 C.F.R. §§41.41, and in response to the Examiner's Answer mailed on March 9, 2010. Specifically, this Reply Brief is intended to highlight the underlying deficiencies of the contentions set forth in the Examiner's Answer with respect to the rejection of the pending claims under 35 U.S.C. § 112, second paragraph, and 35 U.S.C. § 103(a). In the interest of brevity, Appellants have addressed below only those issues or arguments raised in the Answer that are particularly noteworthy. Accordingly, in view of Appellants' attempt to avoid repetition in this Reply, Appellants respectfully request that the Board consider the following remarks in addition to the complete arguments set forth in the Appeal Brief filed on August 26, 2009 (the "Appeal Brief").

### **REMARKS**

After carefully reviewing the Examiner's arguments and the response to the arguments advanced in the Examiner's Answer, Appellants maintain that the rejections of pending claims 1-32 under 35 U.S.C. §112, second paragraph, and 35 U.S.C. §103(a) are improper.

#### ***Response to the Rejection of Claims 1-32 under Section 112, second paragraph***

Claims 1-32, all of which are written in independent form, generally recite imaging techniques which include the use of motion compensation factors in conjunction with retrospective gating points to produce images that are generally free of motion artifacts. In the Final Office Action, the Examiner asserted that the recited motion compensation factors were not enabled by the specification. Specifically, the Examiner stated that the recited "motion compensation factors" of claims 1-32 are "not such a standard element known in the art such that one of ordinary skill would be reasonably apprised of what Applicant considers to be such a factor conceived of within the present invention, nor would one of ordinary skill in the art be reasonably apprised of how to derive or acquire such a factor." Final Office Action, page 5.

As discussed at length in the Appeal Brief, Appellants strongly disagree with the Examiner's position. Particularly, the specification plainly and clearly discusses that the recited motion compensation factors may be determined non-iteratively using organ motion models based on a priori data (e.g., known data about how a particular organ or organs move) or may be extracted using iterative algorithms applied to the sensor-acquired motion data itself (e.g., motion was not previously known), and that the application of such factors may help to compensate for unwanted motion artifacts in reconstructed images of moving organs. *See id.* As the Board will appreciate, the Federal Circuit has held that "the test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation." *United States v. Telectronics, Inc.*, 8 U.S.P.Q.2d 1217, 1223 (Fed. Cir. 1988). With this in mind,

Appellants strongly believe that one skilled in the art with the benefit of Appellants' disclosure would clearly understand how to derive factors to compensate for motion using such a priori models and/or by applying iterative algorithms without undue experimentation.

In the Answer, the Examiner asserted that Appellants' examples of using a priori models or iterative algorithms to derive motion compensation factors are "extremely vague" to the extent that a person skilled in the art would be "unable to make and used the claimed invention without undue experimentation." Examiner's Answer, page 6. Appellants respectfully disagree and note that the burden demonstrating that the scope of enablement is insufficient to support the claims falls on the Examiner. *See In re Hogan and Banks*, 194 U.S.P.Q. 527, 536 (C.C.P.A. 1977); M.P.E.P. §2164.04. Further, a specification that contains "a teaching of the manner and process of making and using an invention in terms that correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as being in compliance with the enablement requirement of 35 U.S.C. §112, paragraph one, unless there is a reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support." M.P.E.P. §2164.04 (citing *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971)). (Emphasis added). In such a situation, it is incumbent upon the Examiner to explain why there is doubt in the truth or accuracy of any statement in a supporting disclosure and to back up assertions of its own with acceptable evidence or reasoning that is inconsistent with the contested statement. *Id.*

With the foregoing in mind, Appellants further note that the Examiner has the initial burden to establish a *reasonable basis* to question the enablement provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 1562, 27 U.S.P.Q.2d 1510, 1513 (Fed. Cir. 1993). However, it does not appear that the Examiner has even clearly defined the level of skill that a person skilled in the art would likely possess or provided any evidence to support an assertion as to why someone having the requisite skill level would be unable to derive the recited motion compensation factors based upon Appellants'

disclosure. With regard to the examples provided in Appellants' specification, the Examiner alleged that the use of "a priori data" (which the Examiner acknowledges as alluding to known or "previously known" data) or the use of iterative algorithms is vague and unclear. Appellants strongly disagree. To the contrary, Appellants believe that a person skilled in the art of medical imaging will readily appreciate that if the goal of imaging is to reduce or eliminate motion-related artifacts, and if the motion of the moving organ is already known (e.g., a priori data from organ motion models) or may be anticipated (e.g., using iterative motion algorithms), then some compensative factor may be calculated or derived to compensate for unwanted motion. To put it simply, if the motion of an object is known or provided, then one skilled in the art would be able to derive some factor to compensate for the motion. It is wholly unclear as to why the Examiner believes that one skilled in the art would not be able to derive some factor to compensate for the known motion without undue experimentation.

Further, with regard to the Examiner's assertion that the specification fails to provide a specific example as to whether a motion compensation factor is intended to refer to, i.e., a mathematical variable, a constant numerical value, a qualitative consideration, etc., Appellants again stress that the "specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation." *In re Borkowski*, 422 F.2d 904, 908, 164 USPQ 642, 645 (C.C.P.A. 1970) (emphasis added). Indeed, as the Board will appreciate, a motion compensation factor derived based on known or provided motion patterns could be one or a combination of mathematical variables, constants, qualitative considerations, or any other suitable factor.

In summary, Appellants again stress that there is simply no basis for an assertion that the specification fails to enable the recited motion compensation factors and, furthermore, it does not appear that the Examiner has defined the level of skill of one skilled in the art or provided any concrete evidence as to why a person having this skill level would not be able to derive or utilize motion compensation factors based upon the

*known or provided* motion patterns (e.g., a priori data or iteratively determined data) for a particular organ. As such, Appellants respectfully request that the Board overturn the Examiner's rejection of claims 1-32 under Section 112, second paragraph.

***Response to the Rejection of Claims 1-32 under Section 103(a)***

As noted above, each of claims 1-32 recite the use of both motion compensation factors and retrospective gating points. Each of claims 1-32 were rejected by the Examiner based at least upon the combination of Bohning and Keegan. In the Final Office Action, the Examiner admitted that Bohning fails to disclose the recited motion compensation factors and, therefore, cited Keegan to remedy these deficiencies. As discussed at length in the Appeal Brief, the rejections of claims 1-32 based upon the combination of Bohning and Keegan are believed to be improper. Particularly, because Bohning already solves the issue of imaging artifacts related to motion by using a binning/clustering technique to align image samples into groups of the same phase, there does not appear to be any objective reason for further modifying Bohning using the teachings of Keegan, which generally discloses the use of motion correction factors to compensate for organ motion. In other words, because Bohning *already* provides a satisfactory solution to remedy motion-related artifacts, one skilled in the art would not find it necessary to modify Bohning using *another* solution (e.g., the motion correction factors of Keegan) for remedying motion-related artifacts.

In the Answer, the Examiner, referring to Appellants' position as "flawed logic," stated that Appellants were essentially arguing that a skilled artisan that finds one reference to be "complete" would *never* be motivated to modify Bohning by substituting any other type of motion compensation method or system, such as the one taught by Keegan. See Examiner's Answer, page 6. Additionally, the Examiner, citing *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007), stated that "the simple use of a known technique to improve similar devices or methods in the same way, which is what Appellant appears to be arguing here, has been clearly held as obvious and unpatentable." Examiner's Answer, page 7.

As an initial matter, it should be noted that the Examiner's statements appear to misrepresent Appellants' arguments and also appear to reflect the Examiner's failure to fully appreciate the holding of *KSR*. First, to be clear, Appellants position is not that a person skilled in the art would "never" modify Bohning in the manner suggested by the Examiner, but that there is no need to improve Bohning based upon Keegan, since Bohning already provides a solution for motion correction. Indeed, the Board should note that Appellants did not use the word "never" in the Appeal Brief, as incorrectly asserted by the Examiner. Further, Appellants did not argue the substitution of the binning/clustering technique taught by Bohning, but rather that combining this technique with Keegan's motion correction factors would likely be redundant, as the binning/clustering technique is already described as being fully capable of solving the problem(s) due to motion-related artifacts, thus obviating the need for the suggested modification at all.

Further, with regard to the Examiner's reliance on *KSR*, it should be noted that the Supreme Court reaffirmed that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *Id.* at 1741. The *KSR* court also made it clear that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does ... because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." *Id.* (Emphasis added). More importantly, the *KSR* court did not diminish the requirement for objective evidence of obviousness. *Id.* ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness").

With this in mind, the Examiner has not provided any objective evidence to support the asserted combination Bohning and Keegan. As discussed above, Bohning relies upon an image clustering and binning technique to correct and/or mask motion-related artifacts. Thus, because Bohning *already* solves the problem of motion-related artifacts, there does not appear to be an objective reason for modifying Bohning to *also* include the motion correction factors of Keegan. In the Answer, the Examiner suggested that since Keegan teaches that cardiac image data may be corrupted due to diaphragm motion, one skilled in the art would be motivated to modify Bohning to account for the unwanted diaphragm motion. However, as best understood, because the image binning/clustering technique of Bohning *already* resolves motion-related issues with imaging due to internal organ motion, which is understood to include diaphragm motion, Appellants believe that any such modifications based upon Keegan would be unnecessary.

Indeed, as discussed in the Appeal Brief, the reasons proffered by the Examiner in the Final Office Action and in the Advisory Action for combining the cited references appear to be nothing more than a pretext for an unneeded modification to Bohning solely to justify the present rejection (e.g., the motivation appears to be based solely on the improper use of hindsight). As the Board will appreciate, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). As such, Appellants respectfully request that the Board overturn the Examiner's rejection of claims 1-32 under Section 103.

**Conclusion**

In conclusion, Appellants maintain that the Examiner has failed to establish a *prima facie* case of obviousness and lack of enablement (with regard to motion compensation factors) with regard to the independent claims 1-32. Therefore, for at least the reasons set forth above, as well as the complete arguments set forth in the previously filed Appeal Brief, Appellants respectfully submit to the Board that claims 1-32 are in condition for allowance. As such, Appellants respectfully request that the Board direct the Examiner to reverse the rejections of independent claims 1-32 under 35 U.S.C. §112, second paragraph, and 35 U.S.C. §103(a).

Respectfully submitted,

Date: May 10, 2010

/John Rariden/  
John M. Rariden  
Reg. No. 54,388  
FLETCHER YODER  
P.O. Box 692289  
Houston, TX 77269-2289  
(281) 970-4545